"usually involves nothing more than making simple qualitative tests for adulterants," by bringing together in one small book the best and simplest qualitative methods of detecting all the common sophistications of foodstuffs.

As a collection of recipes the work is good; in other respects it commands but qualified admiration. For the glorified cookery-book in chemical literature we have no great liking, and this compendium of "tests" is little more. The numerous pitfalls which beset the unwary are rarely indicated in the directions given; and the reasons for the various operations are left for the operator to discover for himself. Now this is well enough if the person using the book is already a master of his craft, knowing the pitfalls and how to avoid them, cognisant of the why and wherefore of his procedure, and only employing the work as a convenient collection of notes wherewith to refresh his memory when applying the various processes. But in the hands of the unpractised person, whether student or "inspector," it is quite another matter. Differences of conditions, apparently slight, may lead him wholly astray. It would be well enough for the enthusiastic student or teacher to test his breakfast bacon for borax, or his morning milk for added water, provided he does it merely for his private information; only in that case it would not benefit the pure-food movement much. But if he is going to lodge a serious complaint on the strength of his discoveries, it would be well, also, first to have those discoveries confirmed by a practised analyst. Otherwise there may arise unpleasant references to the law of libel.

The experiments are well selected and tersely described. As a compendium of some of the best qualitative tests for ordinary food-adulterants the book will be useful, especially to the man who already knows how to apply the processes. C. S.

Altitude Tables. Computed for Intervals of Four Minutes between the Parallels of Latitude 0° and 30°, and Parallels of Declination 0° and 24°. Designed for the Determination of the Position Line at all Hour Angles without Logarithmic Computation. By Frederick Ball. Pp. xxxiii+245. (London: J. D. Potter, 1907.) Price 15*s.* net.

SINCE the notice of the first part of this work appeared in NATURE of February 20, the companion volume for latitudes 0° to 30° has been published, making these tables complete between the parallels of 60° N. and 60° S. By their means the navigator can with facility and rapidity determine his position by the observation of any heavenly body the declination of which does not exceed 24°, and, as the latitude and declination are interchangeable in the tables, they are consequently available for all stars up to 60° in declination between 24° N. and 24° S.

This valuable contribution to scientific navigation will be appreciated by all navigators who employ the "New Navigation"—Captain Marcq St. Hilaire's method—as a practical and direct help in saving the tedious computation of the altitude required in the problem. The tables will undoubtedly tend to popularise that excellent method, which has hitherto been neglected by so many navigators, mainly on account of the lengthy calculations entailed, and more especially when it is realised that their practical utility equals their mathematical exactness.

The introduction to each volume fully explains the various uses of the tables, so that no difficulty need be experienced when employing them. The book is of a handy size and well bound, with clear type well arranged and spaced, so that the navigator with but little light and limited time will find a pleasure in using it. MIREMONT.

Logarithmic and Other Tables for Schools. By Frank Castle. Pp. 36. (London: Macmillan and Co., Ltd., 1908.) Price 6*d.*

THE introduction of more practical methods in the teaching of mathematics in schools has led to an increasing demand for inexpensive tables of logarithms, values of trigonometric functions, and other data which pupils are now encouraged to use at quite an early stage of their mathematical work. Mr. Castle has compiled a series of four-figure tables which will meet every need of mathematical classes in schools, and be of great service in school laboratories. The tables include logarithms and antilogarithms, natural and logarithmic sines, cosines and tangents, degrees to radians and radians to circular functions, hyperbolic logarithms, powers, roots and reciprocals, and exponential and hyperbolic functions. The type is clear and the style attractive, and these qualities, combined with the wide scope and low price, should ensure a wide popularity for the tables.

Praise of a Simple Life. Edited by E. A. Baker. Pp. x+258. (London: George Routledge and Sons, Ltd., n.d.) Price 2*s.* 6*d.* net.

MR. BAKER has compiled a collection of extracts on the theme of a life according to nature from classical writers to the end of the eighteenth century. These utterances are arranged in four sections, which the editor calls respectively the antique world, the dawn of a new age, the age of expansion, and the age of reason. More than four-score authors are drawn upon, so that the reader is provided with a diversity of points of view. The volume is dainty, will go into the pocket, and should be a favourite with readers of poetic temperament.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. *No notice is taken of anonymous communications.]*

On the Radio-activity of Potassium and other Alkali Metals.

IN the course of some experiments made by them on the radio-activity of a series of salts which had hitherto been considered inactive, Messrs. Campbell and Wood (Proc. Camb. Phil. Soc., vol. xiv., part i., p. 15, 1907) found that potassium salts exhibited a radio-activity greater than that of any other substance previously examined which did not contain any of the so-called radio-active elements.

In seeking for the source of this activity, these experimenters found it impossible to separate out any active impurity from the salts examined, and they were led by the results of their investigation, which included measurements on the activities of a limited number of the compounds of potassium, to conclude that the activity originated with the potassium itself, and was an atomic property of that metal.

In a later paper (Proc. Camb. Phil. Soc., vol. xiv., part ii., 1907) Campbell described some additional experiments dealing with the character of the radiation emitted by the potassium salts, and in concluding expressed the opinion that the radiation consisted of β rays possessing an average velocity less than that of the β rays of uranium.

During the last few months the writer, in collaboration with Mr. W. T. Kennedy, has made, in the Physical Laboratory at Toronto, a close examination of the radio-activity of a large number of potassium and other salts, and while the results of this examination confirm the discovery of Campbell and Wood that potassium salts generally possess an exceptionally high activity and emit a radiation possessing considerable penetrating power, they

do not support the conclusion that the activity of these salts is a *normal* atomic property of potassium, and that it is always directly proportional to the amount of that metal present in the salt.

In measuring and comparing the activities of the different salts, these were spread in turn in thin regular layers on a shallow tray, which was placed on the bottom of an ionising chamber 40 cm. long, 26 cm. wide, and 28 cm. deep. The saturation currents through the air in this chamber were measured with a sensitive quadrant electrometer, and were taken as measures of the activities of the different salts. Experiment showed that the saturation current increased with the thickness of the salt layer up to between 2 mm. and 3 mm., and for greater thicknesses remained constant.

The investigation included the examination of some thirty specimens of potassium salts, and thirteen samples of the salts of the other alkali metals. As a result of this examination it was found:—

(1) That samples of a selected potassium salt obtained from different sources exhibited widely differing degrees of activity. Two chlorides of potassium, for example, were found to differ by more than 40 per cent. in their activities, and two of hydroxides by an almost equal amount. In the case of cyanide of potassium, the variation in activity was especially marked, as two samples of this salt exhibited activities which were approximately only 5 per cent. and 20 per cent. respectively of that shown by a number of other samples of the same composition. A sample of potassium sulphite, too, was found to possess an extremely small activity.

With the majority of the salts, however, the variations were not so marked, but the differences observed, even when due allowance was made for the varying densities and states of division of the salts, were so extensive and of such magnitude as practically to preclude the view that the activity of potassium and its salts was connected with a *normal* atomic property of the metal.

(2) That while metallic sodium and several sodium salts did not exhibit the slightest trace of activity, some samples of sodium chloride, obtained in the form of rock salt, showed an activity comparable with that exhibited by a number of the potassium salts. This result, taken in conjunction with the low value obtained by Elster and Geitel in their measurements on the conductivity of air in a salt mine, would indicate that very probably some active impurity was present in the samples of rock salt examined.

(3) That with the exception of ammonium chloride, which exhibited a feeble activity, none of the lithium and ammonium salts examined showed the slightest trace of radio-activity; that a sample of rubidium alum was found on examination to exhibit an extremely small activity, and that a sample of cæsium chloride exhibited one which was only just measurable. J. C. MCLENNAN.

University of Toronto, April 15.

Chemical Analyses of Water from Dew Ponds.

I HAVE been interested in the reviews of books and articles which have appeared in NATURE from time to time on the subject of dew ponds; and it occurred to me that the chemical analysis of the water of these ponds would help to settle the question of the origin of the water. This is a method used to some extent by sanitary authorities. I have had the opportunity of obtaining some specimens of water from different districts, and the specimens have been analysed by Mr. Claude Saville Grace, one of the students at this institute.

The first specimen (*a*) came from a dew pond on the southward down to the north of Ramsbury, Wiltshire. The pond is on the flat upland near the 693-feet mark on the 1-inch Ordnance map south of Aldbourne. The formation is chalk, so that analysis would immediately settle the point as to whether the water had come through the chalk or had been condensed from the air. The other two specimens, (*b*), (*c*), come from St. Boniface Down, north of Ventnor, Isle of Wight. The pond (*b*) is near the 787-feet mark, almost at the highest point of the down; the second pond (*c*) is on the neck between St. Boniface and Shanklin Downs. The downs are chalk masses lying on Greensand rock. I have added the analysis of the St. Boniface spring water, a spring on the south side of the down facing Ventnor, about 450 feet above sea-level. It is locally known as a wishing well, and its chemical peculiarity is that it contains sulphuretted hydrogen in small quantity. It undoubtedly comes out of the chalk, and the sulphuretted hydrogen is due to the decomposition of pyrites which occurs in masses in the chalk.

	$CaCO_3$ parts per 100,000	Cl parts per 100,000	
(*a*) Ramsbury pond	3·6 ...	0·75	inland
(*b*) St. Boniface pond	4·3 ...	3·5 ...	near sea
(*c*) Shanklin pond	7·7 ...	3·4 ...	,,
(*d*) St. Boniface Wishing Well.	23·9 ...	7·3 ...	traces H_2S

The quantities of $CaCO_3$ indicate to me that the waters are, in the cases (*a*), (*b*), (*c*), condensed waters which have been lying in the pond sufficiently long to take up a little $CaCO_3$. The ponds near the sea show increased chlorine, probably from salt spray blown up from the sea. The sulphuretted hydrogen shows the origin of the wishing-well water in the deep chalk.

To me there is very little doubt that all three ponds are simply water butts in which rain water is stored. Inspection of the ponds shows that they have much larger catchment areas than simply the water area, and the area is generally more than nine times that of the pond. We have to remember that for circular ponds and catchment areas of radii 1 and 3 respectively a rainfall of 20 inches would mean a depth of 180 inches (15 feet) when collected into the pond area, so we can easily understand the presence of water all the year round under these conditions.

It is interesting to note that a fresh-water pond is easily distinguished from the hard-water pond by the waterweed growing in the former. I have noticed the same carex in all the fresh-water ponds. SIDNEY SKINNER.

South-Western Polytechnic Institute, May 8.

The Reflection of Distant Lights on the Clouds.

I DO not know whether observations have ever been made to determine how far the reflection of distant lights on the clouds may be seen. It may possibly, however, be of some interest to know that the lights of London may at times be seen in this way at a distance of at least fifty miles. At 11 p.m. on April 30 the reflections of the lights of several neighbouring towns were unusually bright as seen from here. The altitude of the Portsmouth glare was about 10°; the distance of the centre of Portsmouth is about 12·5 miles; the cloud height was therefore about 2·2 miles. Over Hindhead and Blackdown a bright band of light was visible. Circumstances prevented me from measuring its altitude, but I estimated it as one or two degrees. Now London lies exactly in this direction, and fifty miles would bring one to the well-lighted area of south London. If the cloud height were uniform, the altitude of the reflection at this distance should have been a little more than 2°. The only other large town in the same direction is Guildford; the altitude of its glare should have been 5°. I do not think I could have made so large an error in estimating the altitude, but apart from this the Guildford glare would not stretch along the horizon for more than 2°, while the observed band of light stretched for at least 10°, and possibly more, for trees bounded the view to the west and the downs to the east.

CHARLES J. P. CAVE.

Ditcham Park, Petersfield, May 9.

Jupiter's Eighth Satellite.

THE discovery at Greenwich Observatory of Jupiter's eighth satellite, its great distance from the planet, and its retrograde motion, have excited the interest of the astronomical world.

Until more extended observations have led to a more certain knowledge of the orbit, speculation is premature. But it is impossible to resist the conjecture that there is a bare possibility that the object is really the long lost Lexell's comet, which in 1770 was describing an elliptic orbit with an eccentricity of 0·7858, with a periodic time